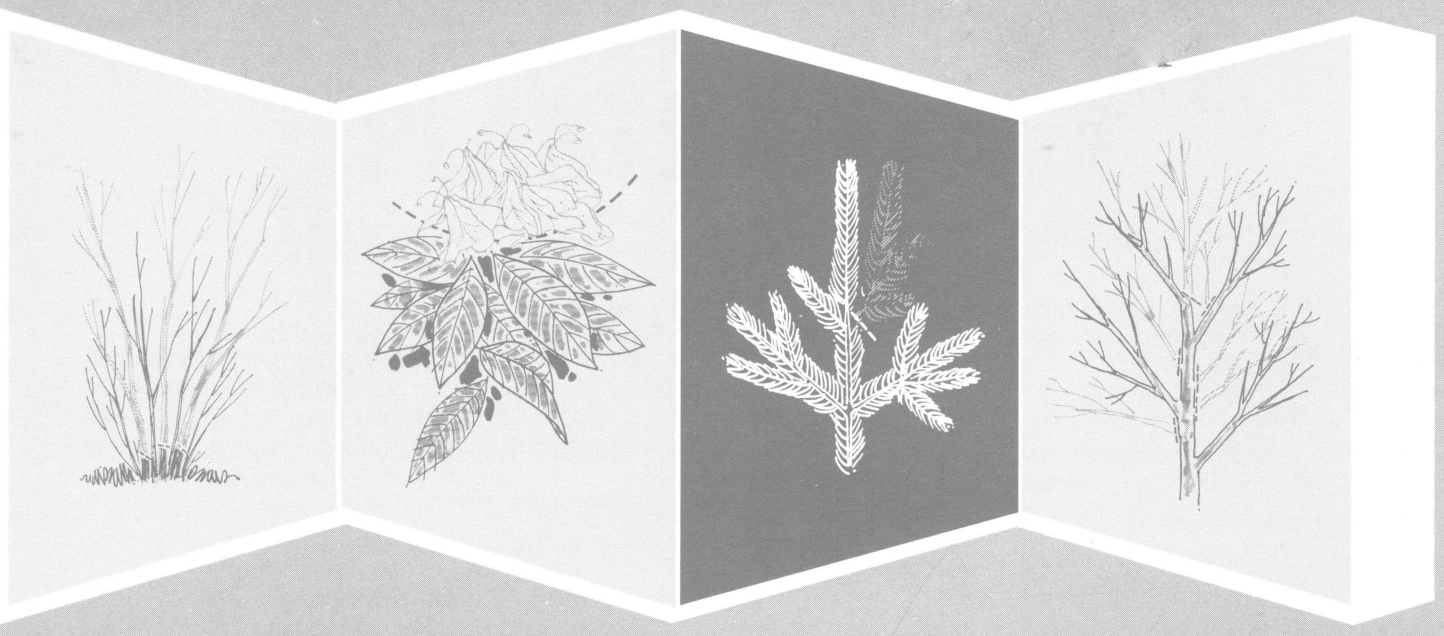
BULLETIN 543



PRUNING LANDSCAPE PLANTS

COOPERATIVE EXTENSION SERVICE / THE OHIO STATE UNIVERSITY

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ACKNOWLEDGMENTS AND FURTHER REFERENCE MATERIALS

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PRUNING LANDSCAPE PLANTS

Pruning, which has several definitions, essentially involves the removal of plant parts to improve the health, landscape effect, or value of the plant. Once the objectives have been determined and a few basic principles understood, pruning is primarily a matter of common sense.

The necessity of pruning can be considerably reduced by selecting the proper plant for the location. Plants which will grow too large for the site tend to be vigorous and become quickly overgrown, are not entirely hardy, or become unsightly with age should be used wisely and kept to a minimum in the landscape plan. Advances in plant breeding and selection in the nursery industry, and the availability of a wide assortment of plants has enabled the homeowner to be more discriminating and to select high quality plants. Even the choicest landscape plants will require some pruning, therefore, the guidelines presented in the following pages pertain to older plants as well as the newest cultivars.

Why Prune

1. To maintain the natural shape of the plant.
2. To maintain or limit the size of a plant so that it doesn't grow out-of-bounds.
3. To remove undesirable growth that would detract from the plant.
4. To remove broken, unsightly, disease, or insect damaged growth.
5. To develop a particular form such as an espalier or hedge.
6. To produce compact growth and prevent legginess.
7. To promote new growth, particularly in older shrubs.
8. To improve future flowering and/or fruiting by removing old flowers and fruit.
9. To improve the chances of survival at transplanting time.
10. To maintain the maximum coloration on those plants selected for twig or stem color.
11. To improve or maintain flowering by removing some branches which would allow light to penetrate to the interior of the plant.
12. To direct or correct the growth in shade trees to avoid problems later on such as eliminating weak crotches or poor branch structures.
13. To remove suckers and/or water sprouts.
14. To rejuvenate old, declining plants by removing older wood so young growth can develop.
15. To increase safety to humans or property under trees by removing large branches that are weak or broken.

When to Prune

Pruning can actually be done at anytime of the year, however, recommended times vary with different plants. Contrary to a popular belief, pruning at the wrong time of the year will not kill the plant, however, continual improper pruning can result in damage or decline. Pruning should not be done at the convenience of the pruner, but rather when it results in optimum plant growth. If this rule is kept in mind, there is little chance of damaging the plant.

In general, the best time to prune most plants is during late winter or early spring prior to beginning of growth. There are exceptions to this rule and they will be noted under the discussion of specific plants. The least desirable time is immediately after the new growth has developed in the spring. A great amount of stored food within the plant in roots and stems has been used in the development of new growth and this food should be replaced by the new foliage before it is removed. If it isn't, considerable dwarfing of the plant may occur.

It is also advisable to limit the amount of pruning done late in the summer as new growth may be encouraged on some plants. This growth may not have sufficient time to harden off before cold weather arrives and consequently, may be damaged or killed by low temperatures. Late pruning also removes valuable food reserves.

Plants damaged by storms or vandalism should be pruned as soon as possible regardless of the season.

How to Prune

All cuts should be smooth so as to encourage rapid healing. This means that good, sharp equipment is a must. Do not leave stubs since they usually die back resulting in damage which can be very serious, especially if large branches or the main trunk of the plant are involved. Once dieback starts, the disease may easily spread to perfectly healthy tissue. The problem is the same if branches are broken off rather than cut.

Some specific rules are given in the discussion of how to prune various plants. Remember, no two plants are exactly the same so each one may have to be pruned a little differently than another.

In most instances, it is advisable to cut back each stem to a bud or side branch. Buds selected that are pointing to the outside of the plant will, in most cases, be more desirable than buds pointing to the inside. By selecting the outside buds, the new shoots will not grow through the interior of the plant or criss-cross which often results in damage to the stems or unsightly growth or shape. To open up a woody plant, prune out some of the center growth and cut back the terminals to buds that point outward.

Results of Pruning

When a branch is cut off, the buds nearest to the cut will usually be the site for new growth. When a terminal is removed, the nearest side buds grow much more than they normally would since apical dominance has been removed, and the bud nearest the pruning cut will become the new terminal. If more side branches are desired, the tip should be removed.

The strength and vigor of the new shoot is often directly proportional to the amount that the stem is pruned back since the roots are not reduced. For example, if a deciduous shrub is pruned to one foot from the ground, the new growth will have little competition for light, moisture, and nutrients. Consequently, this new growth will be vigorous with few, if any, flowers the first year. However, if only the tips of the old growth are removed, most of the previous branches will still be there and new growth will be shorter and weaker. Flowers will be more plentiful although smaller. Thus, if a large number of small flowers and fruits are desired, prune lightly. If fewer, but high-quality blooms or fruits are wanted in succeeding years, prune extensively.

The height of a tree or shrub with two or more stems of equal size and vigor competing for dominance can be controlled by the length they are cut back. If one is left appreciably taller than the other, it will eventually assume dominance over the other.

Pruning Equipment

To know and practice the rules of pruning is most important but almost equally important is to use the right tools. It is possible to have an extensive collection of equipment, but it can be limited to a few if the proper ones are selected.

Select tools which will do the job, keep a sharp edge, and are easy to sharpen and handle.

Some of the most commonly used pruning tools are shown in Fig. 1. Properly cared for equipment will do a better job and last longer. Store equipment in a dry room; keep it sharp and in good operating condition. When pruning diseased plants, disinfect all shear and saw blades after each cut to prevent spreading disease to healthy plants. Alcohol or chlorox can be used to disinfect pruning equipment.

Power equipment such as lightweight chain saws can be purchased or rented. These are particularly useful in cutting fallen trees or large limbs. Power saws for pruning in trees should be used only by professional arborists.

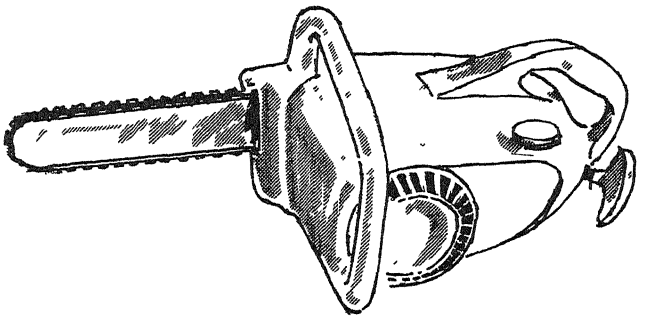

Fig. 1-a Power Equipment

Hedge shears are used mainly for shearing plants into hedges or formal shapes. The most common type is manually operated, however, if large areas of hedges are involved, power driven shears may be more practical.

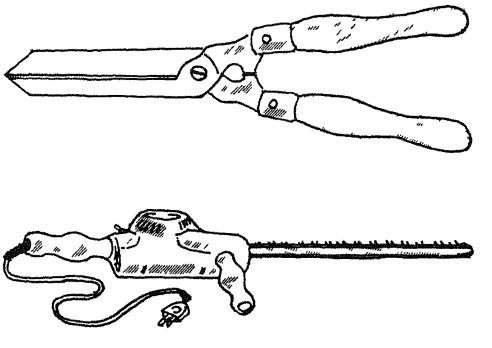

Fig. 1-b Hedge Shears

Pruning saws, both rigid or folding, are very useful for cutting larger branches than can be handled by hand shears or loppers. Tree saws are also available for cutting large tree branches. Pruning saws, which usually cut on the pull stroke, are preferred over a carpenters saw because they will cut faster and easier.

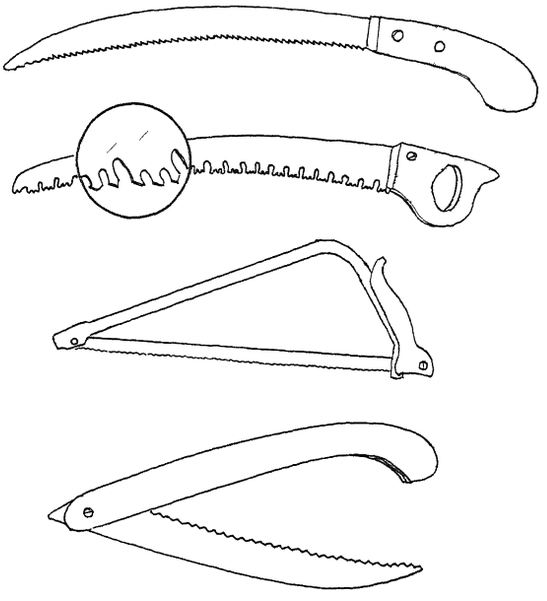

Fig. 1-c Pruning Saws

Pole pruners are used for removing tree branches that cannot be reached from the ground. Two types are generally available. One has a small tree saw attached to the end and can be used for removing small as well as large branches. The other, and more commonly used type of pruner, is similar to a large pair of loppers. A cutting action is brought about by pulling on a rope or lever.

Regardless of the type selected, pruners are available in various lengths. The poles—wood or aluminum—are either one piece or may consist of collapsible sections.

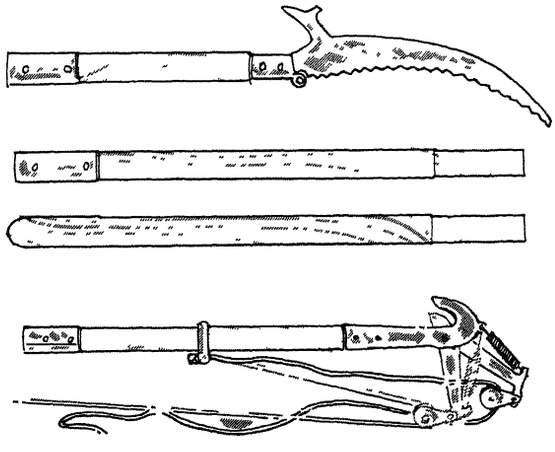

Fig. 1-d Pole Pruners

Lopping shears are for cuts larger than those made with hand shears. Usually they will cut branches up to two inches or more depending on the size of the blade opening. Select loppers with handles no longer than are comfortable to use.

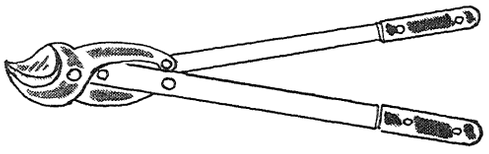

Fig. 1-e Lopping Shears

Hand pruning shears are of many kinds. Most of them are designed for cutting stems up to ½ inch in diameter. If one has to twist the shears to make a cut, then too large a branch is being cut. A close cut can be made with less effort by placing the blade of the shears against the branch or trunk from which the limb is to be removed. The blade should cut upward, as illustrated in Fig 2.

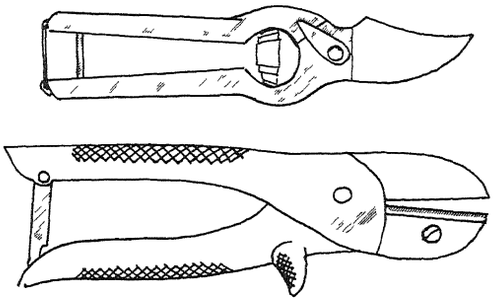

Fig. 1-f Hand Pruning Shears

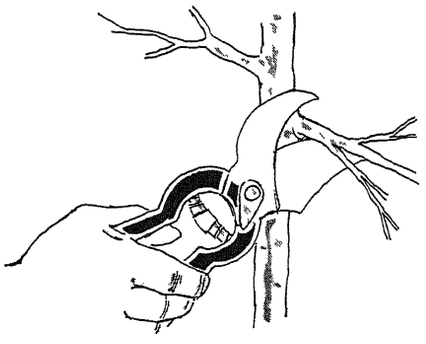

Fig. 2 Proper cutting technique.

General Pruning Procedures

1. Prune out any dead, broken, severely damaged or disease and insect infested branches.
2. Remove any branches that are detrimental to the shape of the plant. Branches that grow through the middle of the plant or cross each other resulting in damage to one or both branches should be removed.
3. Start pruning when plants are young. They are not as likely to become a problem and their natural shape is easier to maintain.

PRUNING SPECIFIC GROUPS OF PLANTS

Pruning Young Trees

Some plants are sold as one-year whips, which are young trees with a long stem and few or no branches. However, most trees are sold as two-year, three-year or older specimens on which structural branches have already begun to develop.

Prune at the time of planting only to remove broken or damaged branches or roots, to remove branches that will not be suitable to form the main framework, or to shape the plant to a somewhat symmetrical form. Do not prune back the central leader of the tree at all unless no leader is wanted such as in the case of certain small flowering trees or where multiple stemmed plants are desired.

Early pruning to direct the growth of young trees is very important if mature trees are to function as expected in the landscape.

The growth habit of a plant and its landscape use determine how and to what extent the tree must be pruned to train it to the desired form. Trees with a central leader and a conical shape like conifers Sweet Gum and Pin Oak may need little or no pruning. Trees with irregular growth habits, poor branch structure, or vigorous laterals such as Silver Maple may need considerable pruning.

Prune a young tree only enough to effectively direct its growth and to correct any structural weakness.

Branches selected for permanent scaffolds must have wide angles of attachment with the trunk for greatest strength, as shown in Figs. 3 and 4.

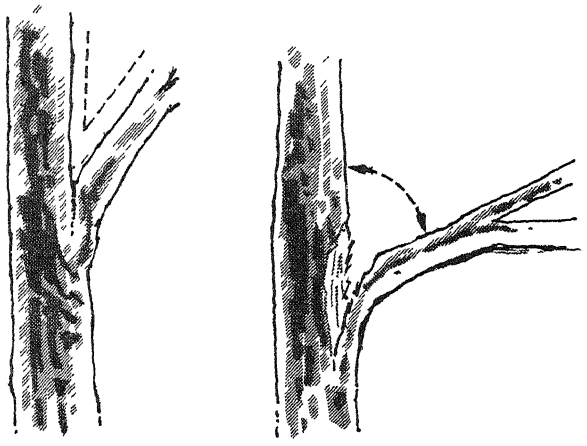

Fig. 3 A branch with a narrow-angle attachment is more likely to split.

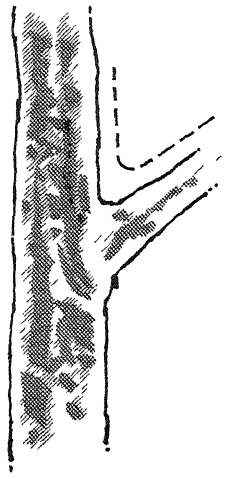

Fig. 4 When possible, select scaffold branches with wide, strong angles.

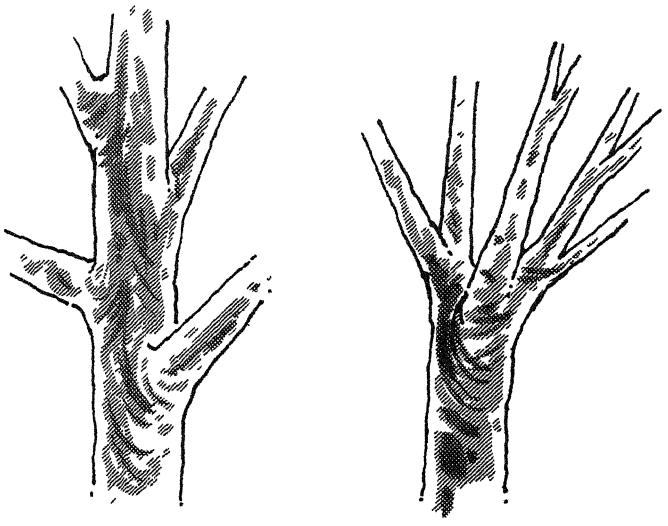

Fig. 5 Well-spaced branches have stronger attachments than those growing close together or in a cluster.

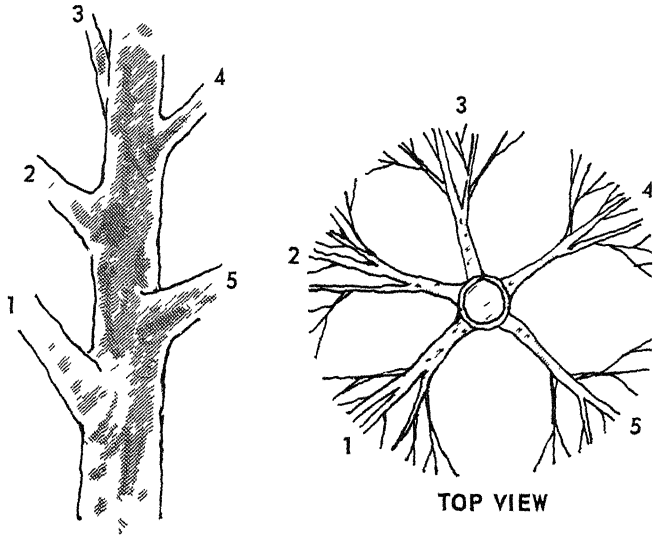

Fig. 6 Branches with good scaffolding require proper vertical and radial spacing on the trunk.

The height of the first permanent branch above the ground will depend on the tree's use such as for screening, windbreak or in street tree planting. The position of a limb on a trunk remains the same throughout the life of the tree. The height of the lowest branch can be a few inches from the ground such as is desired for screening or windbreaks, or 6 to 12 feet above the ground as needed over a street or a patio.

Vertical branch spacing is important in many species for future dominance, structural strength, and appearance of the tree On mature trees closely spaced scaffolds may "break-up" in storms more easily than those with wider spacing, as shown in Fig. 5.

Closely spaced scaffolds will have fewer laterals, resulting in long, thin branches with little structural strength. Major scaffold branches should be spaced at least 8 inches and preferably 10 to 24 inches vertically.

Radial branch distribution should allow 5 to 7 scaffolds to fill the circle of space around the trunk. Radial spacing prevents one limb from being over another which in turn prevents competition for light and nutrients, see Fig. 6.

Direct plant growth by pruning during the growing season as well as when the tree is dormant. During the growing season, pruning is usually confined to shoots and branches that are temporary and will not become permanent branches. Pinching the growing point or complete removal of a shoot will reduce its competition with the leader or shoots selected for scaffold limbs. Remove or prune shoots that are too low, too close, or too vigorous in relation to the leader and shoots selected to become the scaffold branches, as illustrated in Fig. 7.

During the growing season, pinching the tips of vigorous growing, temporary branches may be necessary to keep them in bounds and reduce competition with the leader and permanent branches. Most trees should be examined several times during the year and should be checked first when the new growth is 4 to 6 inches long.

A tree may not be tall enough when planted for the selection of any permanent lateral branches. If laterals are present or grow below where the lowest permanent branch is wanted, they should be handled as temporary laterals. After two or three years, when the trunks of small trees are two or more inches in caliper, the number of temporary branches can be reduced over the next two to three year period. Remove the largest ones at each pruning to minimize the size of the pruning wounds.

Pruning Mature Trees

Tree health and appearance can be improved by removing limbs that are dead, weak, diseased and insect-infested. Sources of future infection and infestation also can be reduced. The steps for removing large limbs are illustrated in Fig. 8.

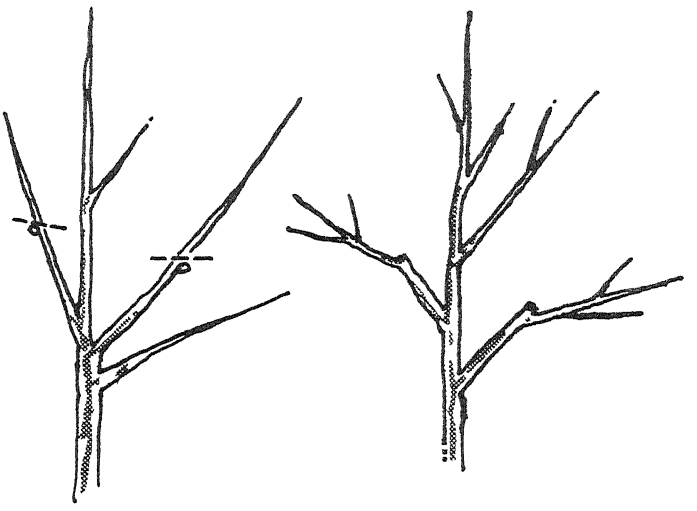

Fig. 7 Prune laterals (left) that are too close or vigorous to keep them from competing with the leader.

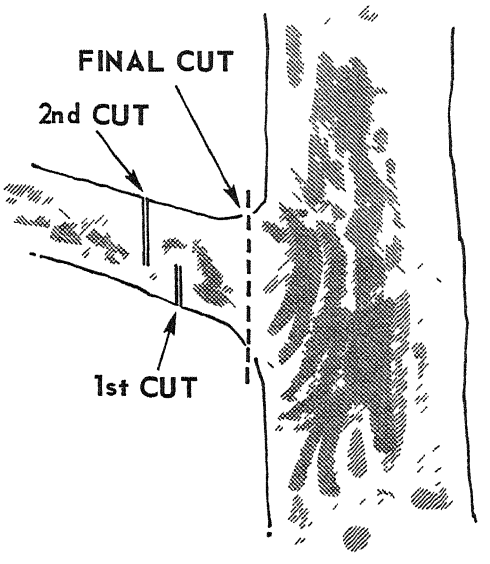

Fig. 8 When removing large limbs, three cuts are necessary to prevent stripping of bark.

The structural features of a tree may be emphasized by moderate thinning to reduce density. Dogwood, Ginkgo and others can be maintained in a picturesque manner in the landscape by moderate thinning.

Size control of trees is commonly attempted by pruning. It is best to prune the tree as it begins to reach the desired height since delaying pruning until the tree is much larger than wanted makes pruning more difficult, cuts harder to hide, and encourages excessive regrowth.

Thinning-out pruning can be used to reduce the height and spread of a tree, as seen in Fig. 9. Cut branches to lower laterals (drop crotching). Some limbs may be removed completely. A thinned tree retains its natural shape and is less subject to vigorous watersprouts than a headed or topped tree, as indicated in Fig. 10.

Topping (heading) is, unfortunately, the most common method of reducing tree size. While more rapid than thinning, the results are, in most cases, much less desirable. Regrowth is vigorous and upright from the stubs. The new branches form a compact head, broom-like terminals, and may be weakly attached to the older branches.

Bleeding of pruning wounds can be heavy on certain trees such as Sugar Maples and Elms. Bleeding of susceptible trees can be minimized if the cuts are small (less than 3 inches in diameter) and made in the fall and early winter. Bleeding is much more likely if severe pruning is done just before growth begins in the spring. No harm occurs to the tree if bleeding takes place, however, if heavy and persistent, it may cause bark injury below the pruning cut.

If large limbs need to be removed or if pruning is required beyond reach, secure the professional services of an arborist. Arborists are trained in the art of pruning to retain the natural beauty of trees.

Wounds over two inches in diameter should be treated with a tree-wound dressing (available at local garden centers.) The dressing will waterproof the wound; help prevent insects, diseases and decay; and promote healing. Since the sun may cause the protective coatings to crack, examine periodically and re-treat if needed.

Repairing Injuries of Trees

Injuries to trees, which expose wood or kill bark, allow insects or disease organisms to enter the tree. Proper treatment protects the tree and promotes faster healing.

Bark Injuries

If bark has been crushed or knocked from the trunk, remove injured bark, shape the wound and apply a tree-wound paint or dressing.

Cut away all damaged bark and remove isolated scraps of bark from the wound area. For fastest healing, shape the edge of the wound as nearly as possible to an elongated ellipse, illustrated in Fig. 11.

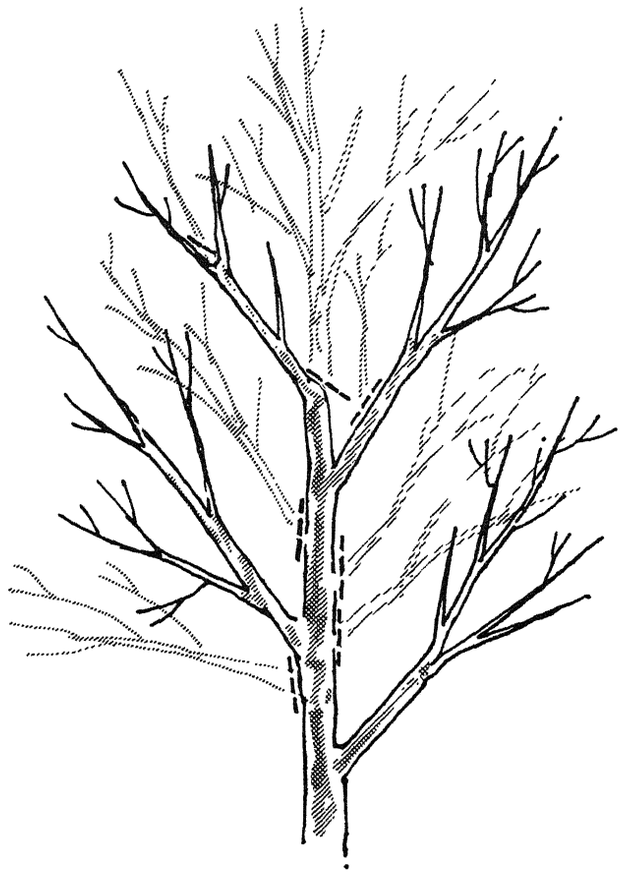

Fig. 9 Thinning-out pruning can be used to control height and it helps retain natural shape.

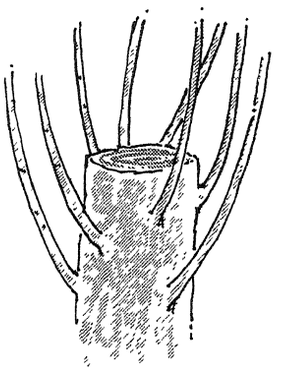

Fig. 10 Topped trees produce vigorous watersprouts.

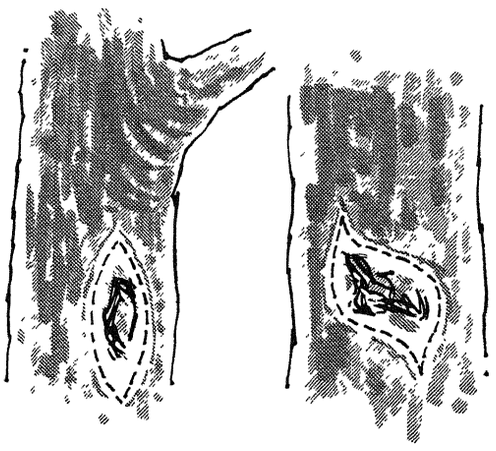

Fig. 11 On bark injuries, shape edge of wound to an elongated ellipse. Irregular shaped wounds (right) may need to be slightly enlarged to attain an elongated ellipse.

If this shape cannot be attained, make a point at the top and bottom of the wound even if the wound must be slightly enlarged.

Remove all splintered wood and smooth the surface of the exposed wood with a chisel.

After the surface of the wound has dried, apply tree wound paint to reduce the entrance of insects, particularly borers, or disease organisms which may lead to considerable decay. Large or slow healing wounds may need additional applications of paint.

Inspect large wounds occasionally to be sure the paint surface is intact. Breaks in the paint film should be repainted. If any decay has developed in the wound, cut it away and re-treat the area.

Lightning Damage

For a year or more after a tree has been struck by lightning, it's difficult to determine the extent of damage since much of the injury may be internal. Trees that seem badly damaged may live while others apparently only mildly injured may die. If the tree can be saved, remove all shattered parts and damaged limbs, and smooth and paint exposed wood.

Split Trunks and Crotches

Split trunks, crotches, or limbs often can be mended by restoring the damaged part to its original position and holding it there permanently. Professional arborists should be consulted to install bolts, screw rods or cables in trees where this work is necessary.

Pruning Deciduous Shrubs at Planting

When shrubs are transplanted bare root, pruning is usually necessary. Light pruning of roots may be needed if any are broken, damaged, or dead. The branches of shrubs should be pruned to offset the loss of a portion of the root system severed when plants were dug. Prune by the thinning method to reduce the overall height and width of the young plant by ½ or more. Thinning is illustrated in Fig. 19.

Shrubs transplanted with a ball of soil (B & B) or from a container often will not require pruning. Occasionally, branches may have been damaged in transit and these should be removed at time of planting.

Pruning Mature Deciduous Shrubs

Correct pruning is one of the most essential of all maintenance practices for shrubs in the home landscape. Proper pruning will help keep shrubs vigorous, maintain them in proper shape and form for a desirable landscape effect, and add years to their usefulness.

Prune deciduous shrubs to maintain natural habit of growth; remove dead, diseased or broken branches; promote flower and fruit development; encourage vigorous growth of plants with colored twigs; and improve chances of survival at transplanting time.

With most shrubs, the ideal time to prune is during the dormant season prior to the beginning of new growth. In order to retain flower buds, shrubs which flower prior to June such as Forsythia, Lilac, and Mockorange should be pruned shortly after flowering. Prune shrubs that bloom after the end of June in the winter or spring before new growth starts because these plants develop their flower buds during the spring growth of the season of flower. Shrubs that bloom on current season's growth include Abelia, Butterflybush, Shrub althea, P.G. and Oakleaf Hydrangeas.

In general, most deciduous shrubs should be thinned out rather than sheared or cut back. Thinning prevents excessive or unsightly branch formation at the top of the plant and maintains the natural habit of growth. Thinning is done by cutting off a branch where it is attached to the main stem, see Fig. 12. This method, the least conspicuous of all pruning, is best used on plants that are too dense. To develop branches which grow towards the outside of the plant, remove the inward growing branches and prune to an outward facing bud or branch.

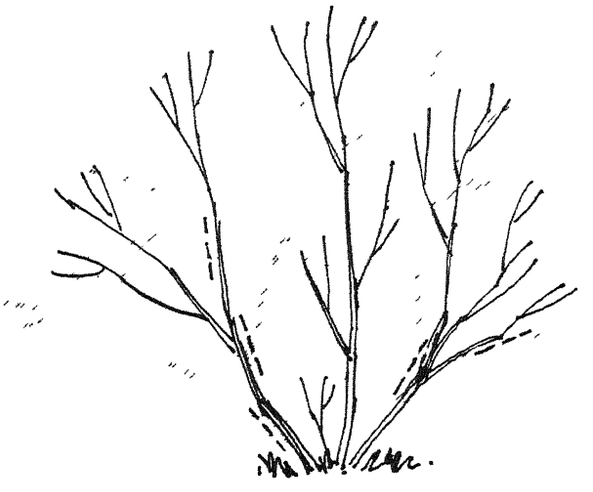

Fig. 12 Light shaded branches and dotted lines show how deciduous shrubs are to be thinned. Thinning is cutting off a branch where it is attached to the trunk or a main stem.

Prune branches at point of attachment with another branch or back to a bud. Pruning just above a bud prevents dieback of the stem and a new branch will develop from the bud. Shearing causes dense growth to develop at the ends of the branches. Such growth shades the rest of the plant and causes it to eventually develop a leggy appearance.

Plants can be maintained at a given height and width for years by thinning out. This method of pruning is best done with hand pruning shears, not hedge shears. Thin out the oldest and tallest stems first.

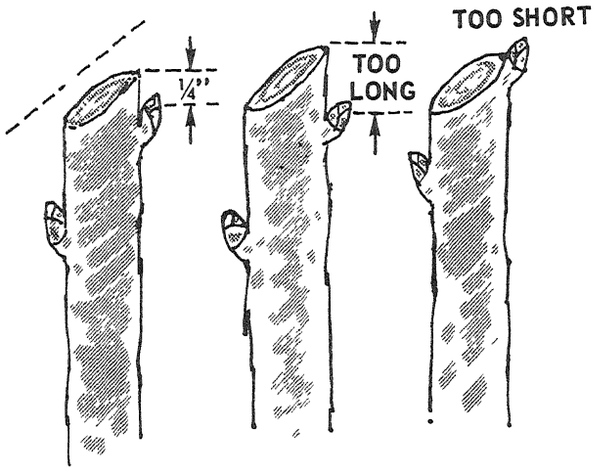

Fig. 13 Make pruning cuts about ¼ inch above a bud and slightly angled away as shown at left.

Make pruning cuts about one fourth inch above the bud slightly angled away from the bud, as shown in Fig. 13.

Older shrubs that have become too large or contain considerable unproductive wood should be rejuvenated. The plant is pruned by cutting off the oldest branches at the ground, leaving only the young stems. If there are not many younger stems, remove the older wood over a three-year period to maintain the over-all shape of the plant. New shoots that develop can be cut back to various lengths by the thinning method which encourages the development of strong branches. Plants which often become overgrown and can be rejuvenated include Forsythia, Honeysuckle, Weigela, and Spirea. Rejuvenation by renewal pruning is illustrated in Fig. 14. These plants, if extensively overgrown, severely weakened or otherwise unhealthy, can be cut back completely to the soil in late winter. Shrubs cut back to the ground may not bloom for one or several years depending on the rate of regrowth.

Certain shrubs, such as Hydrangea and Hibiscus require specific pruning techniques. The most commonly grown species and cultivars of Hibiscus and Hydrangea are listed below with comments relative to pruning practices.

Hibiscus moscheutos

Rose Mallow (at maturity) 3-7′

This woody perennial dies back to the ground each autumn. Anytime after the first killing frost, prune all stems completely back to the soil line.

Hibiscus syriacus

Rose of Sharon (Shrub Althea) 10-15′

This tall growing shrub, valued for its late summer flowers requires little pruning except for removal of seed pods which may remain on the plant

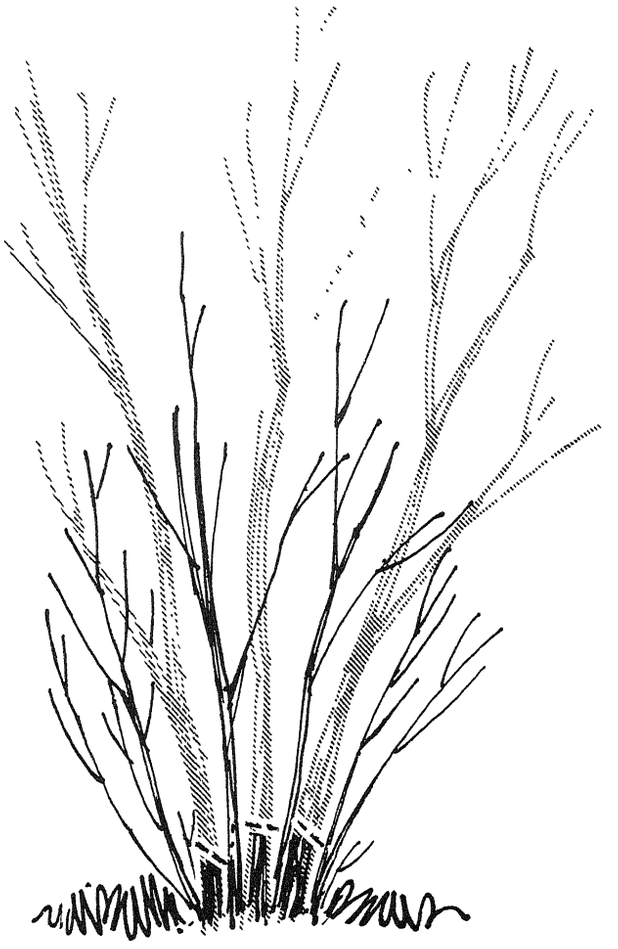

Fig. 14 Rejuvenation of an overgrown or unhealthy plant necessitates cutting plant completely back to the soil in late winter. Control new growth as described for Fig. 12.

for a year or more. If required, pruning can be done in late winter or early spring.

Hydrangea arborescens 'Grandiflora'

Snowhill Hydrangea 3-5′

Prune Snowhill Hydrangea to the ground line each winter because it flowers abundantly on new growth and is usually severely killed back during winter.

Hydrangea macrophylla

Bigleaf Hydrangea 12′

This is the hydrangea with globe-shape flowers, commonly forced by florists and sold during the spring season. Depending upon the pH of the soil in which they are grown, these plants may have either pink or blue flowers. There are also several white flowered cultivars. The above-ground part of this plant is generally not hardy in Ohio unless given protection. The roots will survive and shoots develop but will not flower, so it's not practical to plant this Hydrangea outdoors after the flowers have died unless a foliage plant is desired. Pruning involves

removing winter killed shoots in early spring if the plants are grown outdoors.

A hardy cultivar in Ohio, Nikko Blue Hydrangea will usually die back to some extent in winter. Prune this cultivar in late winter or early spring prior to new growth, since it flowers on the growth of the current season.

Hydrangea paniculata 'Grandiflora'

Peegee Hydrangea 25'

This is the most commonly planted Hydrangea because in mid-late summer it has a massive display of white flowers which gradually turn pink. The flowers frequently remain on the plant in a semi-dried condition long after the leaves have fallen. Pruning involves the removal of dead flowers, if they are unattractive, and corrective pruning of vigorous shoots. Shape and thin the plant in late winter or early spring, since flower clusters develop on current seasons growth.

Hydrangea petiolaris

Climbing Hydrangea 50'

This mid-summer flowering woody vine becomes attached by aerial roots to brick, masonry or wood. Prune in late winter to control direction of growth and during summer only to remove shoots that are out of bounds.

Hydrangea quercifolia

Oakleaf Hydrangea 6'

This plant is grown primarily for its handsome oak leaf shaped foliage, excellent fall color, attractive flowers, and interesting winter bark. In exposed sites it is subject to some winter dieback. Prune in early spring only to remove old flowers and dead or dying wood.

Pruning Narrowleaf Evergreens

In general, evergreens should be pruned during the winter when they are dormant. An ideal and recommended time is at Christmas so the greens or trimmings may be used for decorations. The exception to this rule is Pine which should be pruned when the candle growth develops in the spring.

Prune evergreens according to their growth habits. Allow these plants to assume their natural shape. Do not shape them into balls, birds or other formal habits. Pruning is a matter of cutting the branches so that a more desirable plant is attained through compact, controlled growth. This requires pruning individual stems rather than shearing. Shearing not only ruins the natural habit of growth but prevents light from penetrating the center of the plants resulting in foliage drop. In addition, insect and disease control become difficult when spray materials cannot penetrate to the center of the plants. There are certain rules to follow for various types of narrowleaf evergreens.

Spreading Type

(Examples: Some Yews, Pfitzer Juniper)

These plants have a spreading growth habit. The proper pruning procedure is to cut back enough to prevent leggy or uninhibited growth. A common problem results from needles dropping off the lower branches due to shading by upper branches. This is prevented by cutting back the longer branches that develop on the top so the lower branches will be exposed to light, as illustrated in Fig 15.

It is best to cut back some each year to prevent the plant from getting out-of-bounds. An example of a vigorous growing, spreading evergreen is Pfitzer Juniper. It is not uncommon for this plant to produce 12-18 inches or more of growth each year which should be reduced in sites where space is limited. It may even be necessary to cut back into the previous year's wood to maintain the size and shape of this plant. Spreading Taxus, commonly called Yews, may, if necessary, be cut back into two or three year old wood. The cuts may be unsightly for one or two years, but will eventually be hidden by new growth.

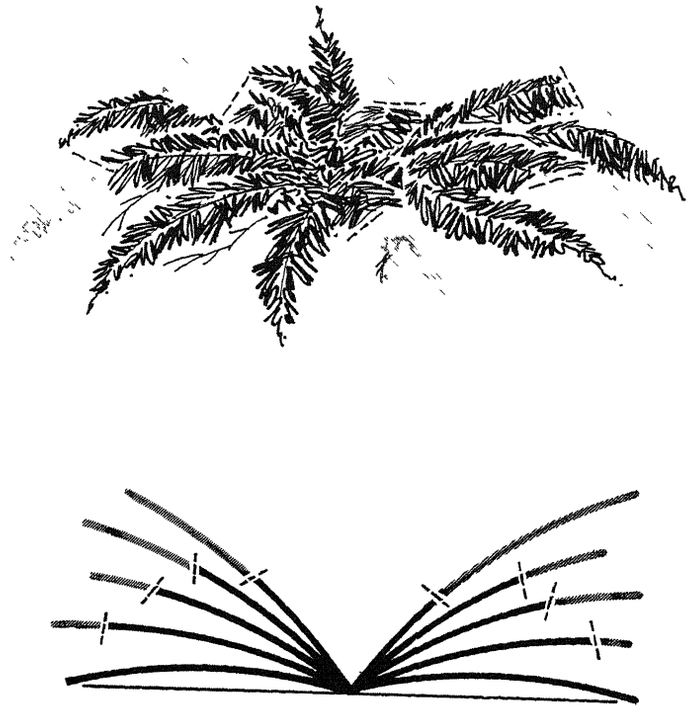

Fig. 15 Prune spreaders by cutting back longer, upper branches, as shown in top illustration. Long branches should be cut back from a few inches to half the branch, as shown in lower illustration, to prevent shading of lower branches.

Upright Type

(Examples: Hicks Yew, Canaert Juniper, Pine, Spruce)

These plants may be either narrow upright or pyramidal in shape. In the case of narrow, upright plants such as Hicks Yew, the previous year's growth should be cut back about one-quarter to one-half to encourage a thick growing plant, as shown in Fig. 16. Pyramidal plants such as Spruce or Pine should be cut back a little on the sides to just maintain or develop a more compact shape. The central leader of Spruce or Pine should not be cut at all except to remove a multiple leader, see Fig. 17. This may occur when the plants are young. Remove all but one of the stems being sure to leave the straightest and strongest growing stem. Upright forms of Arborvitae require very little, if any pruning.

When plants such as Spruce or Pine are young and growing vigorously, the top growing point may outdistance the rest of the plant, as shown in Fig. 18. This results in an open space between the main

Fig. 16 Cut back ¼ to ½ of previous year's growth on narrow uprights (note top drawing). On pyramidal plants, cut back just enough to maintain compact growth.

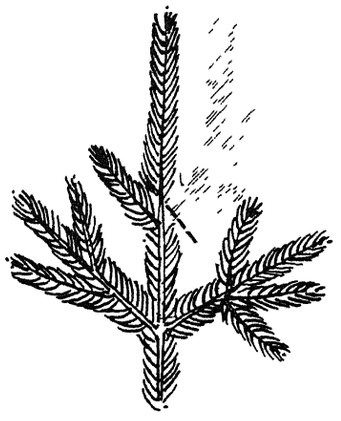

Fig. 17 Remove multiple leaders on spruce and pine, leaving best one to become new central leader.

Fig. 18 Cut back central leader only when it outdistances the rest of the plant. This forces a lower bud to become new leader.

Fig. 19 Snap or cut out dead flowers of Rhododendron, being careful not to damage new shoot growth.

body of the plant and the growing tip. To encourage the plant to branch and be more compact, cut the top back to a dormant bud located close to the main body of the plant, as shown in Fig 18. If this cutting back is done when plants are young, there will be little effect on the appearance of the plant.

Mature plants of tall growing evergreens such as Spruce, Pine, upright Arborvitae and some Junipers cannot be severely cut back or topped without damaging the shape. Once these plants become too tall for the place they are growing, it may be necessary to remove the entire plant. Avoid this problem by proper selection of plants for the area. Hemlock is a plant that may be allowed to grow in its natural pyramid shape or cut back to form a hedge or screen.

Rounded Type

(Examples: Brown Yew, Globe Arborvitae)

These plants are normally globe shaped and should not be sheared into balls. A good example of this is the Brown Yew which can be maintained at about whatever height and shape desired. Normally, this plant will develop as a broad, rounded specimen so the pruning is done to the previous year's growth to just keep it bushy and compact. This means removing about ¼ to ½ of last year's growth, as illustrated in Fig. 16. Thinning of individual branches, rather than shearing, will result in a more attractive, natural habit. In contrast to this plant, Globe Arborvitae require little, if any, pruning due to the normal formal habit of growth.

Pruning Broadleaf Evergreens

(Examples: Rhododendron, Holly, Pieris, Boxwood)

One of the advantages of broadleaf evergreens is the fact they require little, if any, pruning. Some pruning may be necessary such as is listed under the heading, General Pruning Procedures. The most important practice to follow is the removal of spent flowers, as shown in Fig. 19. If this is done, more growth will be produced by the plants and more flowers will form for the next year. A prime example of this type pruning is on Rhododendrons where only the old flower cluster is removed. Simply snap out the flower, being careful not to damage developing young shoots present immediately below the flowers.

Do not indiscriminately cut off the flowers on all broadleaf plants as some of them such as Holly and Firethorn develop beautiful fruit. If the flowers are cut off, no fruit will developed.

A plant that deserves special attention is Pyracantha or Firethorn. Many gardeners feel there is really no good time to prune this plant. The flowers for the next year are produced on the previous seasons growth.

If the plant is quite large or overgrown, then the best time of the year to prune is in the late winter when dormant. This practice will eliminate most or all of the flowers for the next spring depending on how severely the plant is cut back. When a light pruning is required, winter is still the proper time. If careful when pruning these branches, enough of last years growth can be left to insure flowering for the current year, as shown in Fig. 20. Pruning Pyracantha in the summer reduces or eliminates fruiting in the fall depending on how severely the plant is pruned. Pyracantha pruned severely at any time of the year reduces flowers and fruits, therefore, prune lightly every year rather than extensively every several years.

Fig. 20 It is difficult to prune Firethorn without eliminating last year's fruits plus fruits and flowers for the next year. Annual, light pruning insures flowers and fruits each year.

Pruning Hedges or Screen Plants

To have a desirably shaped hedge, one must begin pruning when the plants are small and continue this procedure throughout the life of the plants. A hedge requires more pruning than other plants due to the formal shape that is desired. In general, a hedge should be pruned so that it is broader at the base than at the top, as shown in Fig. 21.

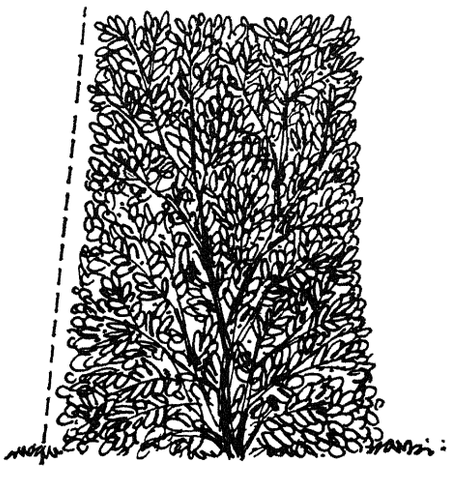

Fig. 21 Prune hedge so base is broader than top. Regular pruning is necessary throughout life of plant.

Since both deciduous and evergreen plants are used for hedges, the methods of pruning vary somewhat as follows.

Deciduous Hedge

It is important to maintain the shape in such a way that the hedge is broader at the base. Start pruning when plants are small, cutting them back a little each time to increase the density and attain the desired shape. It may be necessary to prune them two or three times from April to September.

Occasionally the lower part of hedges are bare of leaves and all that is visible are old, woody stems with all the leaves and flowers produced at the top of the plant. If a situation such as this exists with plants like Spirea, Privet, or Forsythia, cut the hedge back to the ground as illustrated in Fig. 22. New growth will develop and this can be shaped as recommended. This type of cut back should be done in late winter or early spring before new growth begins.

Some plants used for a hedge such as Winged Euonymus or Viburnum cannot be cut back this drastically and in such cases, one will have to follow a gradual cut back, as illustrated in Fig. 23.

Fig. 22 If deciduous hedges lose their lower leaves and become leggy, cut the plant to the ground (shown at right) and shape new growth as it develops, keeping base broader than top.

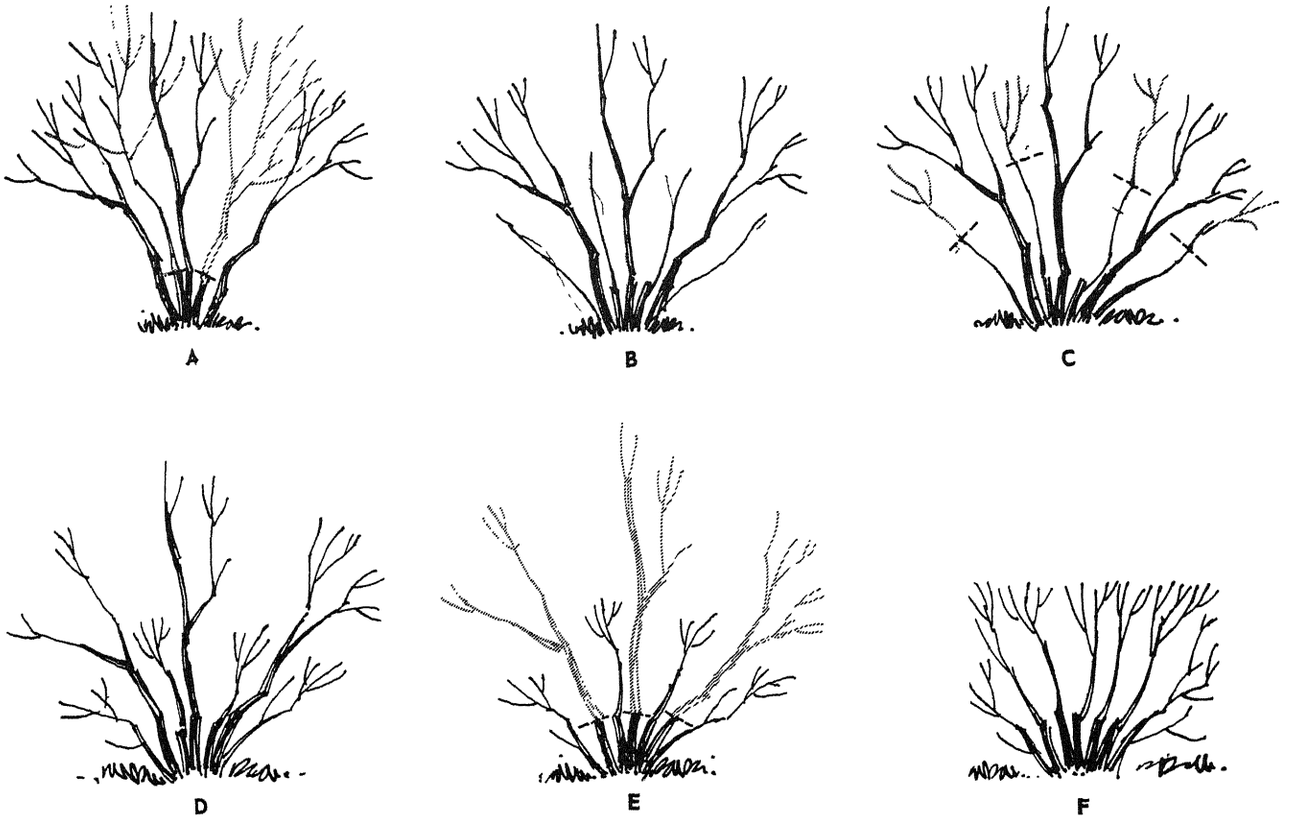

Fig. 23 Plants used for a hedge such as Winged Euonymus or Viburnum must be cut back gradually, as illustrated here. (A) First year, remove ⅓ of old branches near ground level. (B) Growth at end of first season. (C) Second year, use thinning technique to cut back new growth. (D) Growth at end of second season. (E) Third year, remove remaining old stems. (F) Growth at end of third season (rejuvenated hedge).

remove one third of the oldest woody stems completely to the ground. This will allow young growth to develop. Cut back the other growth one third to one half or more which will encourage branching. If this is done over a period of two or three years, it will be possible to get the hedge in shape.

Evergreen Hedge

Again, the important factor to remember is to prune to keep the base broader than the top, as illustrated in Fig. 22. Usually, pruning in the spring prior to shoot growth and again during the summer to remove feathery new growth is all that is required. Certain evergreens such as Yews are more suited for growing as a hedge than others, so make the original selection carefully.

Screen Plants

Deciduous plants used for screening purposes basically should be pruned the same as if they were individual specimen plants. Evergreens used as screens are generally the larger growing types such as Spruce, Pine, Arborvitae, Canada Hemlock and upright Junipers. Most of these plants should be allowed to grow naturally and pruned as described in the Upright Narrowleaf Evergreen section. Canada Hemlock is the exception and can have the top cut out so that it spreads out rather than gets tall. Hemlock can then be sheared much the same way as any other everygreen used as a hedge.

Pruning Garden Roses

There has been much discussion and controversy concerning the proper time and way to prune roses. Results of research work at The Ohio State University rose test gardens indicated that if hybrid teas, floribundas, polyanthas, and grandifloras are pruned in March rather than in the fall, more flowers can be expected during the summer. Prune climbing type roses immediately after flowering to prevent removal of flower buds for the following year.

Some of the fundamental practices of pruning pertain to all garden roses regardless of the type. When bare-root roses are planted, tops should be cut back to 12-15 inches. Frequently this is already done before they are received. Remove any roots which are broken or damaged. With potted roses, these two practices are generally taken care of before the plants are purchased.

Due to the severity of Ohio winters, canes are frequently killed down to the soil or mulch line. It is then a very simple practice to cut them back by removing all of this dead or damaged wood, as shown in Fig. 24. If damage appears on one side of the cane only, remove the cane since the damaged area will ultimately affect the growth of new shoots.

Disregarding severe winter damage, there are a few pruning practices that must be performed. Three of the more important are: (1) remove any canes which have been broken or damaged by insects or diseases; (2) remove one of two canes which may be rubbing; (3) remove those canes that are spindly or smaller in diameter than the size of a lead pencil. After pruning according to these general recommendations, hybrid teas, floribundas, and grandifloras should be cut to a height of 18-24 inches or to a height that is in balance with other plants in the rose bed, see Fig. 25.

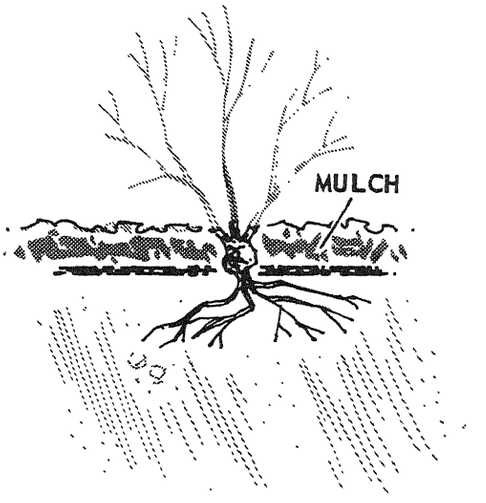

Fig. 24 To prune garden roses, remove winter killed or damaged canes at a point below dead or damaged area, even to the soil or mulch line.

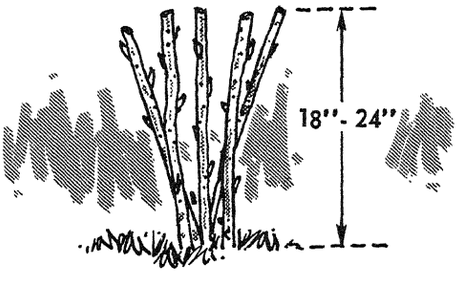

Fig. 25 Cut canes of roses not damaged by winter back to 18 to 24 inches or to a height in balance with other plants in rose bed.

Climbing roses are generally pruned in accordance with the basic practices of pruning as listed. In addition, there may be some very old, heavy canes growing in the center of the plant which are not producing many leaves or flowers and it is recommended to cut them out by pruning completely to the ground. The newer canes will produce more growth and flowers which are more desirable. Since the canes may become quite long, it will be necessary to prune them back so they are maintained in the de-

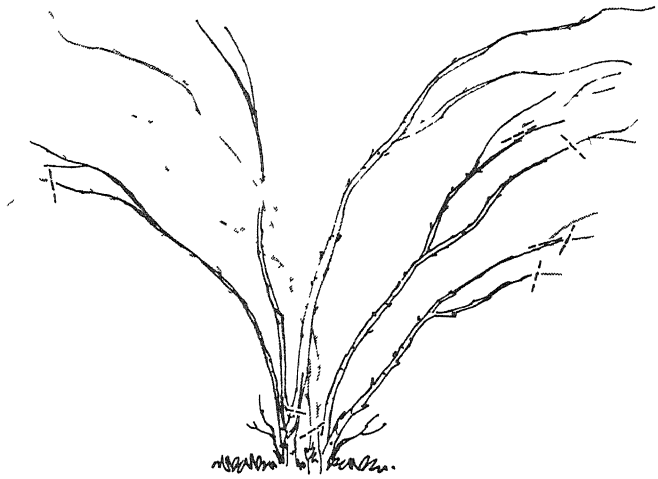

Fig. 26 Prune climbing roses by removing dead canes and non-prolific, old canes. Keep in bounds by cutting back long, trailing canes

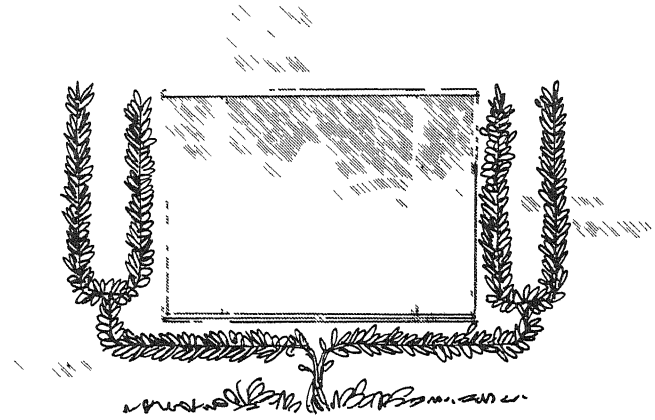

Fig. 27 For best results with espalier plants, start with a trained one To develop your own, follow instructions given under Espaliers.

sired area, as in Fig. 26. When planting a climber. allow enough space for its growth or continual pruning will be required.

When pruning roses, cut back to just above a bud that is pointing towards the outside of the plant. Be sure that all cuts are clean and not torn.

Pruning Vines and Ground Covers

Vines usually need pruning to limit growth, to thin the stems and branches, and to remove dead or damaged wood. Some vines such as Honeysuckle, certain Wintercreepers and Silverfleece Vine grow so fast and thick that considerable pruning may be necessary while others need little pruning.

Prune most vines in the dormant season. This includes the summer flowering Clematis such as the Jackmani type. The Florida and Patens types, including *Clematis montana*, blossom on one-year-old wood and should be pruned by thinning out in spring prior to growth.

Prune dead, diseased and damaged vines back to healthy wood. Interfering branches of woody vines such as Trumpet Creeper or Wistaria should be cut back below the point of interference or all the way back to the junction with the main stem.

Prune out the top one-third of overgrown or elongated stems.

Prune by one-third or more old mature stems that are declining in vigor. Each year, prune stems of Bittersweet, Trumpet Creeper and Wistaria to promote new growth and flowers. Prune back the top of the plants to force out new branches. Silverfleece Vine should be pruned to the ground in early spring each year to produce vigorous new growth.

Special mention should be given to Wistaria because considerable confusion exists as to pruning and flowering.

The two species most commonly grown are *Wistaria floribunda* (Japanese Wistaria) and, to a lesser extent, *Wistaria sinensis* (Chinese Wistaria) both of which bloom before or with the unfolding of the leaves.

Pruning Wistaria extensively during the dormant season may encourage rampant vegetative growth the next spring. Instead, in July prune out the long, straggly growth except those branches needed for climbing. This is more likely to induce flowering than anything else. Shoots should be cut back ⅓ to ½ their length which will induce the production of short spurs upon which next season's flower clusters will be borne.

While Wistarias are normally vines, shrubby and/or weeping forms can be created by pruning. The height is held at a definite point by pinching out young shoots and after several years, a trunk-like stem is produced. Then leaders can be allowed to droop to the ground.

Wistaria will bloom abundantly if planted in good garden loam with full sun, watered well the first growing season, and pruned in the summer.

Ground Covers

Pruning ground covers is usually necessary only to remove unhealthy tissue, awkward or straggling branches, or to keep a plant from becoming too invasive. Vigorous ground covers include Honeysuckle, Crown Vetch, Wintercreeper, Wichura Rose, and English Ivy.

Certain plants such as Honeysuckle, Pachysandra, Euonymus and English Ivy should be mowed or cut back to 5 to 6 inches in height every year or two to keep the beds vigorous, neat and more pest free.

Espaliers

Espalier plants are those trained in a pattern on a flat surface such as a fence or wall. With proper care, plants can be trained into almost any desired

shape. However, unless one is willing to maintain such training indefinitely, it is better not to try to develop a plant such as this.

Usually, it's easier to start with a trained plant purchased from a commercial source. If a trained plant is not available, a one-year old plant should be used. The following describes the formation from planting a whip (1 year old plant) into one of the simpler designs named the Double U, as illustrated in Fig. 27.

Since plants should be selected for espalier (pronounced es-pal-yer) for year-round interest, that is, foliage, flowers, fruits and winter character, flowering, crabapple provides a good example.

The first spring after planting a one-year whip, cut it to within 10 or 12 inches above the ground. From the uppermost bud, a new terminal shoot will develop. About mid-June, cut this new shoot to less than half an inch of where it started. This procedure should force out at least two new shoots at the same level and of about equal strength. If there are more than two, cut off the extra shoots Then tie the two shoots to a frame, rod, or wire to keep them horizontal. After 12 to 15 inches of growth, turn the tips upward.

The following spring and again in June, after the turned up branches have grown sufficiently, cut both branches back to 12 to 15 inches above the bend and treat as the original shoot. This will produce four uprights to form the Double U. During the first few years, other shoots will start to grow. Prune all of these back, to less than ½ an inch to the trunk or branch from which they came. In time, fruiting spurs will develop.

Most all other espalier forms can be made by following the same general principles. A number of patterns can be achieved, as seen in the designs in Fig. 28.

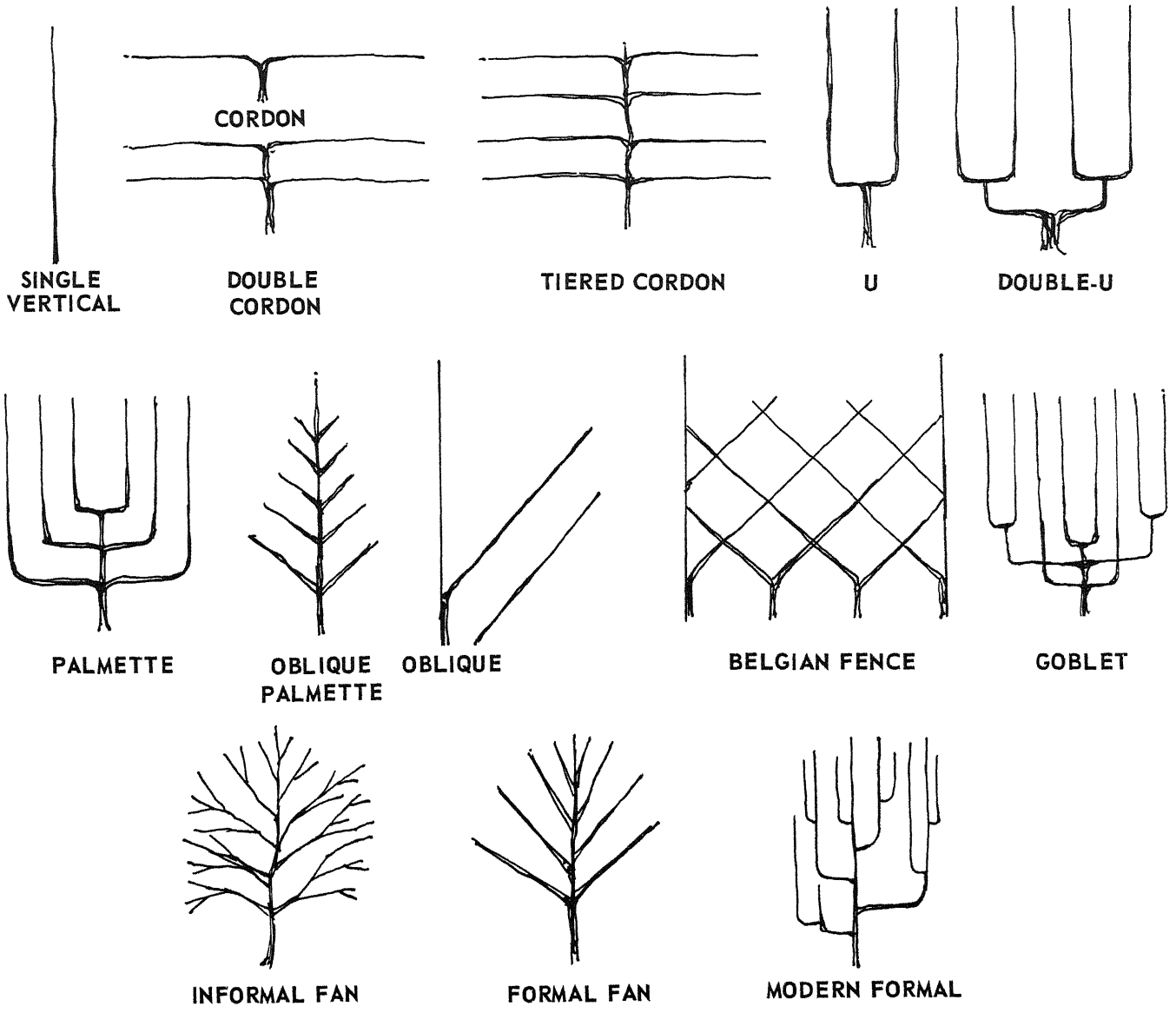

Fig. 28 Shown are some espalier patterns. The most commonly used is the Double-U.

SUMMARY

Pruning is the removal of plant parts to make the plant grow the way we want it to.

Plants are pruned to maintain size and natural shape; remove broken, disease or insect damaged growth; promote new growth; improve flowering and fruiting; increase chances of survival at transplanting; direct growth; remove suckers and watersprouts; and rejuvenate older plants.

Pruning is usually done during the late winter and early spring when the plants are dormant with the exceptions noted under the discussion of specific plants.

Most pruning is done with either hand shears, lopping shears or pruning saws, all of which should be kept sharp and working properly.

Pruning cuts should all be clean and if over 2 inches in diameter, treated with a commercial tree wound dressing.

Always prune by thinning to a branch or bud to maintain the natural shape of the plant regardless of whether it's a tree, shrub or evergreen. The exception to this rule would be in the shearing of ground covers or hedges and in maintaining espalier plantings.

DEFINITION OF TERMS

Bleeding—the flow of sap from a cut or injured surface of a plant.

Broadleaf evergreen—an evergreen plant with broad leaves which are not needleshape.

Budded—the propagation of a plant by inserting a dormant bud of one plant into the stem of another.

Caliper—refers to the diameter of a tree. In nursery-landscape practice, caliper is measured 6 inches above the ground level up to and including 4-inch diameter size and 12 inches above the ground level for larger sizes.

Candle—refers to the early spring growth of pine shoots prior to needle expansion.

Central leader—the main stem of the tree from which other branches develop. In most cases, it would be the trunk.

Crotch—the angle developed between two connecting branches.

Deciduous—plants that normally have leaves only during the growing season and lose their leaves during the dormant season.

Dieback—the dying back of stems due to adverse weather conditions, insects, diseases, or other causes.

Dormant—that period of the year when a plant is not growing.

Drop-crotching—thinning type of pruning in which a main branch or the leader is removed by cutting to a large lateral. The cut is made at the crotch formed with the portion removed and the lateral remaining.

Dwarfing root stock—that root which is used to reduce the size of a plant on which it is grafted or budded.

Espalier—to train a plant on a wire or trellis against a wall or other means of support.

Grafted—the propagation of a plant by joining two different plants together by inserting a shoot from a desirable plant into the stem or root on another plant.

Lateral—a branch originating from the main trunk.

Legginess—growth that is generally tall without much foliage near the ground, resulting in a plant that is open and undesirable.

Multiple stemmed plants—plants that have more than one stem from the base compared to plants which have only a central leader.

Narrowleaf evergreen—an evergreen plant with leaves which are needle shaped.

One-year whip—refers to a one-year old unbranched tree.

Permanent branch—a branch that is a part of the major growth habit of the tree and usually originating from the trunk.

Radial branch spacing—the distribution of branches around the trunk of a tree.

Scaffold branching—a permanent branch originating from the trunk and becoming a part of the major branching or framework of the tree.

Shearing—the cutting back of plants with hedge shears resulting in a very formal habit. Shearing should be limited to hedges, topiary, or where a formal garden is to be maintained.

Spore—reproductive organ of fungi similar to a seed.

Sucker—a vigorous shoot originating from root or stem tissue below ground.

Temporary branch—a branch usually originating from the trunk, which is removed by pruning after the permanent branches have been selected.

Terminal—tip ends of branches.

Thinning—the removal of connecting branches to their point of origin or shortening the length of a branch by cutting to a lateral.

Trained—to dictate the development and growth of a plant by physical means, such as pruning.

Transplanting—moving a plant from one place to another.

Vertical branch spacing—the distribution of branches up and down the trunk of a tree.

Watersprout—a vigorous shoot arising from the trunk or older branches.

Wound—the area expressed when the bark of a plant is cut or damaged.

Wound dressing—a specially formulated material when applied to tree wounds, protects, and encourages healing.

Professional Pruning

When large trees must be pruned, contact an Arborist or Commercial Landscape Maintenance firm because they are:

— schooled in safe practices
— protected with adequate insurance
— knowledgeable of specific tree cultivars and their habit of growth
— equipped with proper equipment
— skilled in using saddles, ropes and climbing techniques
— trained in correct pruning practices and tree removal
— conscientious about cleaning up upon completion of all work